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OF

HIP-JOINT DISEASE

COMPLICATED BY A

FRACTURE OF THE FEMUR.

ADAM'S SUBCUTANEOUS SECTION OF THE NECK OF THE FEMUR.

By NEWTON M. SHAFFER, M. D.,

OF NEW YORK,

CLINICAL LECTURER ON ORTHOPEDIC SURGERY, MEDICAL DEPARTMENT OF THE UNIVERSITY OF THE CITY OF NEW YORK, ATTENDING SURGEON IN CHARGE OF THE NEW YORK ORTHOPEDIC DISPENSARY AND HOSPITAL, ORTHOPEDIC SURGEON TO ST. LUKE'S HOSPITAL, NEW YORK.

REPRINTED FROM THE ANNALS OF ANATOMY AND SURGERY, DECEMBER, 1883.

BROOKLYN, N. Y.

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A CASE OF HIP-JOINT DISEASE, COMPLICATED BY A FRACTURE OF THE FEMUR; ADAM'S SUBCUTANEOUS SECTION OF THE NECK OF THE FEMUR; DEATH.

By NEWTON M. SHAFFER, M. D.,

OF NEW YORK,

CLINICAL LECTURER ON ORTHOPEDIC SURGERY, MEDICAL DEPARTMENT OF THE UNIVERSITY OF THE CITY OF NEW YORK, ATTENDING SURGEON IN CHARGE OF THE NEW YORK ORTHOPEDIC DISPENSARY AND HOSPITAL, ORTHOPEDIC SURGEON TO ST LUKE'S HOSPITAL, NEW YORK.

THE following case presents some very interesting and peculiar features, both in a mechanical and surgical aspect. From the very lengthy history of the patient, as it appears upon the records of the New York Orthopedic Dispensary and Hospital and of St. Luke's Hospital, New York, I gather the following facts, which comprise the most essential points:

Sarah S., aged five years, a resident of New York City, was received as an out-patient at the New York Orthopedic Dispensary and Hospital on June 20, 1870, coming under my personal care. Her father, an English seaman, and her mother, also English, were apparently healthy people. The former had suffered occasionally from rheumatism, but there was no trace, so far as could be ascertained, of any hereditary taint. The brother and sister of the patient were very strong and healthy, and the patient herself showed no especial evidence of struma, though she was paler and less robust than the other children.

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When the patient applied for treatment, the mother stated that the cause was supposed to be "a violent fall upon the sidewalk." The examination of the patient developed the fact that she was suffering from hip disease, the left hip being affected. The history shows that she had been suffering for two years prior to her admission. The thigh was flexed and adducted, and the patient was walking upon crutches. There was very limited motion at the hip joint, movement being arrested at a certain point by a tetanic spasm of the muscles, whenever the limit of motion was reached. There was no abscess visible, and none could be detected by the most searching palpation.

The patient had been treated in a public institution of this city, where several blisters had been applied and a spica bandage had been worn. The effect of this treatment was a modification of the pain and an increase of the deformity.

A few days after the history had been recorded, I applied a long extension splint, at the residence of the patient, placing the limb upon an inclined plane, and using an abduction screw. On August 19, 1870, about two months after the patient applied for treatment, "the flexion and adduction were nearly overcome." On August 29, "the improvement is remarkable." On September 23, "excellent motion." On October 4, the patient was permitted to "run about out of doors," using the apparatus as a protection. This privilege was much abused by the patient and her mother. On November 17, I find the record, "does not receive proper care; large, hard tumor in groin; no fluctuation." December 9, "has symptoms of abscess." January 4, 1871, "has dermatitis from the adhesive plaster; name selected for the corps of lady visitors." February 15, "has better care since the ladies visited patient; is improving." March 6, "œdema still exists at hip." April 17, "œdema still at hip; no pain; good motion." May 2,

"motion better; symptoms of abscess disappearing." July 10, "joint motion quite free."

This history illustrates a not unusual course of a patient in dispensary orthopedic practice. Feeling the great relief which the apparatus affords, and the deformity being overcome, these patients do too much. They become as active as other children who are not afflicted with joint disease. They are liable, sooner or later, from this cause, viz.: overexertion, to have a relapse. They build up again by rest and care, as this patient did, to a point where with care and attention a very excellent result may, with reason, be expected. But this patient was so extremely active, that, notwithstanding the cautions and rebukes administered to the mother, the patient had her own way, with, in this case, a very unusual result.

July 23, 1871.—"Patient had a fall and fractured the femur, on the diseased side, at junction of lower and middle-third. The apparatus was uninjured." *Treatment.*—Removal of adhesive plaster on thigh to a point just below fracture. Traction with the hip splint, the fractured ends being held in apposition by a leather splint, which was snugly bandaged to the entire thigh. Patient was seen every day, and good traction was maintained. On August 25, it was found that the fracture had united perfectly in good position, and that there was one-half inch shortening, some, if not the greater portion, of which was due to the disease.

The patient was now put upon her feet, and she again commenced to walk about, using the apparatus, of course. On November 17, "the motion at joint good; no symptoms of abscess present." Several unimportant entries show that the patient continued to improve up to December 19, 1873, when the apparatus was removed and the patient was kept under observation to test the effect which would follow the removal of the support. On January 19, 1874, it

was deemed advisable, on account of slight pain and reflex spasm to again apply the apparatus.

On April 14, 1874, the apparatus was again removed, and after watching the patient closely until September 10, 1874, she was discharged cured, with almost perfect motion at the joint, one and one-quarter inch shortening and a very slight limp. On November 18, 1875, the patient was visited. There had been no relapse; "general condition good; considerable motion at joint; one and one-quarter inch shortening."

This period of the patient's history is very instructive. After reaching a point where recovery was almost certain, she fell, and, by some strange combination of circumstances, broke the thigh bone that was protected by a strong extension splint. I anticipated much trouble in this case, and looked for a decided increase of symptoms. But by making a considerable amount of traction and using a coaptation splint, I succeeded in obtaining a good result as to the fracture, and protected the joint at the same time. There was no decided increase in the symptoms, and, as shown in the history, after a somewhat prolonged struggle, the patient was discharged cured, with good motion, and with an excellent and useful limb.

This experience with the hip splint in the treatment of a fractured thigh, and the favorable result obtained, under so many discouraging circumstances, led me soon after to adopt the same measures in a case of ununited fracture of the thigh, in an adult, aged 55, who had four months previously been thrown from his carriage. The surgeon who attended the case immediately after the fracture used the gypsum bandage.

When I saw him there was three and one-half inches shortening, and the point of fracture at junction of upper and middle thirds was easily demonstrated. I applied a

long extension splint, and drew the limb down to nearly its normal length, and maintained it there for four weeks. Then a modified support was applied, and in four months union was complete, with about one inch shortening. Another case very similar to it in all essential particulars came under my care two years ago, and was treated in the same way. The result was perfect union in three months. A case of recent fracture of the thigh was also treated by Dr. George A. Peters, in St. Luke's, Hospital by this method, in a child, with an excellent result.

As to the course pursued by the patient after the last record made above, we have no positive evidence. It is to be presumed that the child followed her own inclinations, as the mother had no control over her, and the father was either absent from home or sick. The patient told me, after she entered St. Luke's Hospital, that she had had several severe falls, and that she had been pushed down by her playmates at school, and that after each fall her hip would hurt her more. She said that she was afraid that the splint would be applied again and that she did not come to the Dispensary on that account. Be that as it may, on September 23, 1878, just four years after the patient was discharged as cured, she presented herself at the Dispensary again, when she was examined by Dr. George A. Peters and myself. The thigh was found to be flexed at 75° and adducted at 30°. The measurements were as follows:

Length left leg.....28¼ inches.
Length right leg.....29 "
Circumference of the left thigh at a point six inches below ant. sup. spine of ilium.....13⅝ "
Circumference of the right thigh at a point six inches below the ant. sup. spine of ilium.....15⅜ "

There was no perceptible motion at the hip joint, no pain, and there was no evidence of inflammatory action. There was, apparently, an anchylosis of the hip joint in a very bad

position, rendering locomotion without crutches impossible. Under these circumstances it was advised that the patient enter St. Luke's Hospital for the purpose of having Adam's operation performed, in which advice Dr. Peters concurred.

The patient accordingly entered St. Luke's Hospital on January 8, 1879, in the service of the orthopedic surgeon.

The same measurements as those previously recorded are found in the St. Luke's record, and a few days previous to the operation I examined the joint under ether, to assure myself that the condition was not one of pseudo-anchylosis. No movement was perceptible under a not very profound anæsthesia.

On January 28, 1879, with full Listerian precautions, and assisted by Dr. G. H. Wynkoop, I made an incision and passed the saw down to the neck of the femur. After sawing for about thirty minutes, I estimated that the bone was nearly severed, and that it would be safe to make an attempt to fracture the remaining bridge of bone. I withdrew the saw and made forcible flexion. The limb yielded. After some manipulation, and without the aid of tenotomy, the limb was brought into a good position. The wound was washed out thoroughly with a solution of carbolic acid (1–40) and considerable "sawdust" removed. A complete Lister dressing was applied, without a drainage tube, and the limb was placed in a long extension hip splint, with the lateral screw.

For the following memoranda I am indebted to my assistant at St. Luke's Hospital, Dr. John F. Ridlon.

January 28, 8 P. M.—Complains of pain in hip. ℞ Magend. Sol. ♏ *v*.

January 29, 7 P. M.—Redressed under spray. There has been a small amount of bloody discharge. Temperature, 100.8°.

February 2.—Temperature has raised from 100° to 101.2°.

Redressed at noon under the spray. There has been some serous discharge. No pus.

February 4.—Re-opened under spray. Same conditions as before. Little serous discharge. Temperature (P. M), 101.2°.

February 8.—Dressing removed under spray. Lister discontinued. Simple dressing substituted, there being only a little serous discharge. Opening closing. Irrigate with 1–40 carbolic wash. Patient placed in prone position and extension of thigh made to overcome a slight flexion of thigh. Temperature, 100.2°.

February 12.—Some puffing at point of incision, which closed two or three days ago ; opened and a little brownish serum discharged. Temperature, 101.6°.

February 15.—Still little serous discharge ; no pus has, as yet, been discharged. Temperature, 101° (P. M.) There was discovered a slight *abduction* of the limb. Straps were passed over the shoulders, from the hip band of apparatus, and by the aid of the lateral screw adduction was successfully performed ; opening closed.

February 17.—Limb in good position.

February 19.—Some puffiness again at seat of incision. Opened as before, with some serous discharge, about ℥ ss in quantity.

March 1.—Temperature ranges between 99° and 100°. No pus has been discharged from the opening. Patient is improving in appearance.

March 9.—Temperature normal for several days. Opening has been closed several days. No puffiness or pain.

March 22.—Temperature has not been taken since last entry, patient having done so well. Puffiness and fluctuation again at point of incision, which has remained closed since last entry, the patient having been kept in the recumbent position ever since the operation. Incision made and exit given to about ℥ j of *scro-pus.*

March 22, 3 P. M.—Temperature, 103.5°; 7 P. M., 102°.

March 23.—Afternoon temperature, 101°. The cavity is hyper-distended with 1–40 solution of acid carbolic, and subsequently injected with Bals. Peru. and covered with oakum; about ℥ ss of thin pus is discharged daily.

March 30.—Afternoon temperature, 101°. Has been normal for several days. No pain. The probe does not touch dead bone.

March 31.—Felt chilly last night, vomited early this morning. Had quite a decided chill to-day. Temperature 103°. No cause of trouble apparent, except the pus. Complains of pain at times in thigh and at knee. Cavity and discharge about the same.

April 2.—Temperature down to 99° and 100° again. No bad symptoms.

April 11.—Temperature went up again to 103.5° and went still higher in evening.

April 14.—Temperature again at 99°. There is some tenderness and induration on anterior part of thigh just below Poupart's ligament.

April 20.—Evening temperature, 103°. Good general condition except during time of high temperature.

April 21.—Temperature about normal again. Cavity remains about the same as three weeks ago.

May 13.—For several days a small abscess has been forming a little below the ant. sup. spine of ilium. To-day it opened spontaneously. ℥ i of pus discharged with considerable bloody serum. Injection of the sinus at point of operation, finds its way out through this abscess. The probe passes into old sinus about four inches directly inwards, following the line of original incision, but does not reach bare or necrosed bone. It also passes in another direction inwards and forwards about the same distance. The probe entered the last abscess only a short

distance. No dead bone discovered in any of these sinuses.

May 26.—Allowed to get up and move about on crutches. General condition good.

August 15.—General condition has been good. Splint temporarily removed a few days ago on account of excoriations. Splint reapplied to-day. Afternoon temperature 103.20.

December 12.—Previous attack subsided in a few days. To-day the patient had a severe headache and fever. (No record of temperature appears.) Complains of pain in thigh.

December 15.—A small abscess opened on thigh, and an ounce of healthy pus evacuated.

January 5, 1880.—Discharge has improved and has almost ceased.

March 8.—Very slight discharge. General condition good.

June 10.—General condition excellent. Patient healthy and strong. Walks without an extension splint, sinuses still open.

July 19.—Probe passed in four inches, but no dead bone discovered.

September 15.—Examined by Dr. Geo. A. Peters at my request. No denuded or dead bone could be touched in any of the sinuses.

November 16, 1880.—Discharged improved.

Prior to the discharge of the patient I had on several occasions begged the mother to permit me to enlarge the original incision, and to make a thorough investigation into the condition of the parts. She always refused, and when the patient was discharged, it was with the understanding that if she became worse she was to return for a further operation.

After her discharge from the hospital the patient changed her residence, and though I made repeated efforts to find her, I could not succeed in discovering her. On February 9, 1881, the mother came to the Dispensary again and requested professional attendance. The patient, under the poor care and unrestricted exercise, had become gradually worse. The limb had again become deformed, being flexed and adducted. Sinus after sinus appeared upon the hip, until it looked, at a short distance, as though it had been riddled by buck shot. The probe now reached dead bone, and it appeared as if the shaft was wholly exempt from the necrotic process. At the site of the head of the bone there was very evident necrosis.

Again the mother declined to permit any operative interference, and I reluctantly turned the patient over to Dr. Simeon A. Foster, the out-door visiting surgeon of the Orthopedic Dispensary, who, at my request, kept a record of his visits and watched the patient until her death, which occurred from exhaustion on April 1, 1881, two years and three months after the operation. The mother declined to permit any explorations after death.

The behavior of this patient after the operation is very suggestive. Without going into a detailed analysis of the symptoms presented, it would perhaps be well to give the impressions I received at the time of the operation, and to ascertain, in the absence of post-mortem certainties, if the subsequent erratic course of the case does not confirm these impressions.

As a matter of precaution, it will be remembered, I gave the patient ether a day or two prior to the operation, to determine whether or not actual anchylosis existed. The test at the time satisfied me that true anchylosis did exist, though I did not carry the anæsthesia to a very great degree. When, however, at the time of the operation, the

anæsthesia became profound, and the muscles acting upon the hip became thoroughly relaxed, and I had made a nearly complete section of the neck of the femur, I applied a considerable force, with a view of fracturing the remaining bridge of bone. I believe this bridge did not fracture. The motion occurred, I am quite sure, at the joint itself—an incomplete anchylosis being weaker than the unsevered neck. I was struck, in sawing through the neck, with its extreme density. It certainly was healthy bone tissue. Had a false point of motion been established at the place of partial section, there would have been a *sudden* fracture. But, and this excited my suspicions at the time, the yielding was gradual, and I could feel a succession of short "snaps," such as I have felt when breaking up a partially anchylosed knee joint.

The condition of affairs, then I thought, amounted to this. I had made a partial and nearly complete section of the neck of the femur, and had re-established motion at the formerly diseased articular surfaces. Just how soon the partially severed section would become necrotic under those circumstances I thought, depended upon the depth of the section. In other words, the fate of this section of bone depended upon its blood supply, with a certainty that a violent acute inflammation would occur at the disturbed joint surfaces.

The sequel, I think bears me out in my suspicions, and carries with it a lesson that, I feel, ought to be recorded. Had I been permitted to enlarge the original incision and remove the necrotic bone I think that the result would have been different.